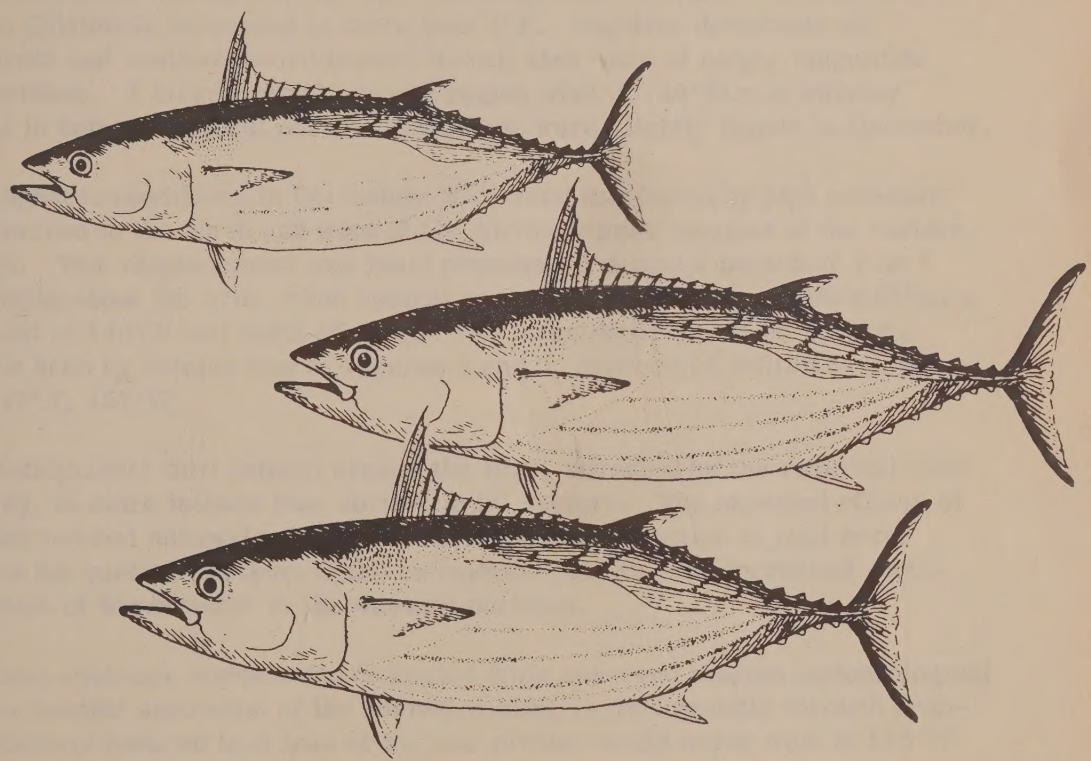
ITED STATES
RTMENT OF
MMERCE
BLICATION

DECEMBER 1971, No. 12

FISHING INFORMATION

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



NATIONAL
MARINE
FISHERIES
SERVICE

UTHWEST
FISHERIES
CENTER
LA JOLLA,
ALIFORNIA

Contents

Page

Narrative Description of Ocean Temperature Conditions 1

Sea Surface Temperature Charts, Pacific Ocean, December 1971 2

NARRATIVE DESCRIPTION OF OCEAN TEMPERATURE CONDITIONS

DECEMBER 1971

Northeastern Pacific

Winter cooling of sea surface temperatures from November to December 1971 over most of the northeastern Pacific Ocean differed from the normal rate by amounts which, although small, were distributed so as to increase the intensity of anomalous conditions (Fig. 3). The magnitude of negative deviations off Southern California increased to more than 4°F. Negative deviations off Baja California and southwestward toward Hawaii also were of larger magnitude than in November. A large central oceanic region west of 140°W was warmer than normal in both months but positive deviations were slightly higher in December.

Atmospheric conditions in December 1971 were dominated by high pressure systems centered to the north and west of the normal winter location of the eastern Pacific High. This displacement was most pronounced during a period of 7 or 8 days, beginning about the 17th, when central pressures greater than 1030 millibars occurred west of 140°W and north of 40°N. The mean departure from normal, which can be seen by comparison of Figures 8 and 9, exceeds 16 millibars in the vicinity of 47°N, 157°W.

The anticyclonic flow pattern around the High, revealed by the resultant wind field (Fig. 9), is more intense than normal in all sectors. The expected effects of stronger than normal anticyclonic air flow is increased advection of cold water southward in the eastern portions of the circulation pattern, and increased northward advection of warm water in the western portions.

The heat exchange components computed from observed marine meteorological data imply a similar alteration of the normal cooling regime (mostly through evaporation), whereby reduced heat loss at the sea surface would occur west of 155°W with increased heat loss east of 150°W. These effects conform qualitatively to the observed distribution of sea temperature change.

Eastern Tropical Pacific

Seasonal cooling off most of Central American increased to an above normal rate in December 1971, causing temperatures to drop from above normal to near normal. Positive deviations remained larger than 2°F only in the vicinity of Salina Cruz. Conditions along the Equator also were generally cooler with respect to normal than in the preceding month, particularly around the Galapagos Islands and to the west of longitude 155°W. Negative temperature anomalies became larger than 2°F in much of the zone from 10°N to 20°N, between longitudes 125°W and 155°W. Southwest of Hawaii, however, the opposite change occurred as higher than normal temperatures resulted from reduced seasonal cooling.

SEA SURFACE TEMPERATURE CHARTS, PACIFIC OCEAN

DECEMBER, 1971

Acknowledgements

The following organizations and stations contributed data for the December charts:

Hopkins Marine Station, Pacific Grove, California, J. P. Balesteri
Inter-American Geodetic Survey by L. Peren at Puerto Armuelles, Panama; S. Leiva at Talara, Peru
Kelco Company, San Diego, California
Living Marine Resources Inc., San Diego, California
National Oceanic and Atmospheric Administration
National Marine Fisheries Service, La Jolla, California; Honolulu, Hawaii; Seattle, Washington
National Weather Service, San Diego, California
National Ocean Survey, Pacific Marine Center, Seattle, Washington
Pacific Environment Institute, Fisheries Research Board of Canada West Vancouver, British Columbia, by H. J. Hollister from observations; D. Smith at Langara Island; J. Godin at Cape St. James Light; L. Collins at Kains Island Lightstation; O. A. Edwards at Amphitrite Point Light
Scripps Institution of Oceanography, La Jolla, California, by Margaret Robinson
U. S. Naval Weather Service, Fleet Numerical Weather Central, Monterey, California
Fishing Vessels CHERYL MARIE, CONQUEST, EASTERN PACIFIC, GEMINI

Charts

Figure 1 -- Mean sea surface temperature, eastern north Pacific Ocean. Squares show temperatures at weather ship stations. Numerals on shore are temperatures at coastal and lightship stations.

Figure 2. -- Mean sea surface temperature chart, western north Pacific Ocean.

Figure 3. -- Deviation of sea surface temperatures, eastern north Pacific Ocean from long term charts of H. O. 225. Hatched areas are colder in 1971.

Figure 4. -- Deviation of sea surface temperatures, eastern north Pacific Ocean from those of December 1970. Hatched areas are colder in 1971.

Figure 5. -- Mean sea surface temperature, eastern tropical Pacific Ocean. Numerals on shore are temperatures at coastal stations.

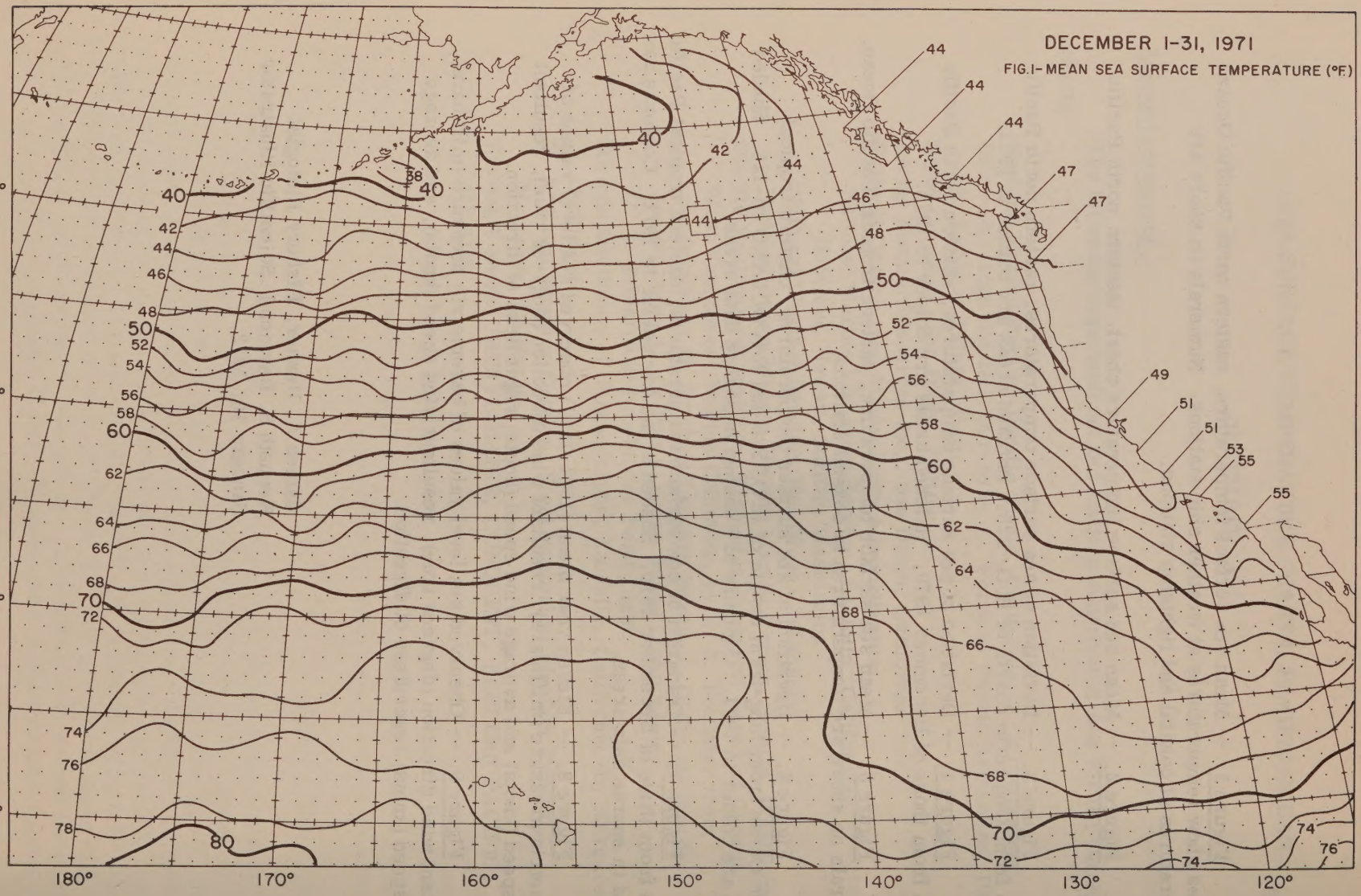
Figure 6. -- Deviation of sea surface temperatures, eastern tropical Pacific Ocean from long-term charts of H. O. 225 and NAVOCEANO sp-123. Shaded areas are colder in 1971. Contours are dashed in sparse data areas.

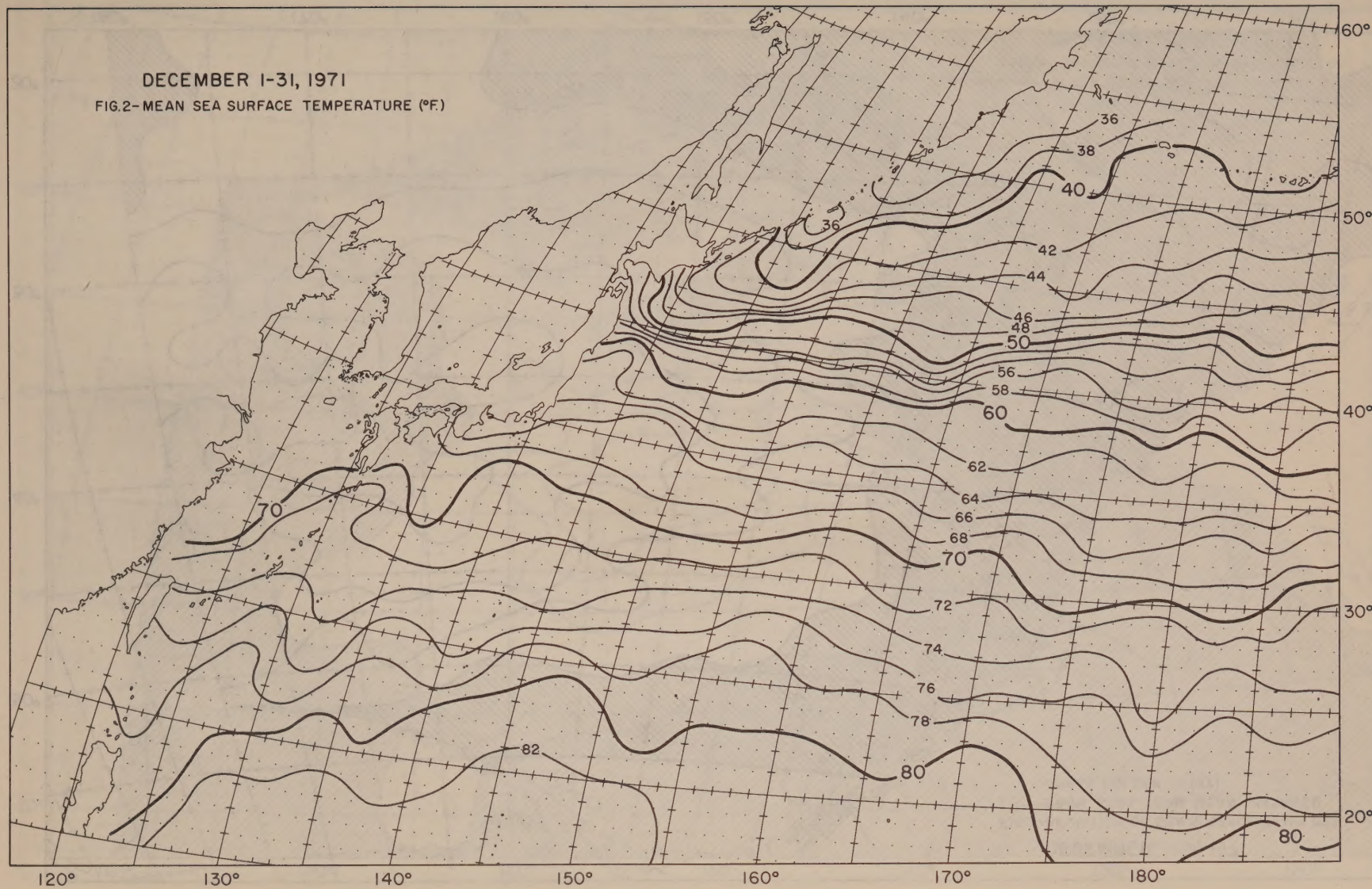
Figure 7. -- Deviation of sea surface temperatures, eastern tropical Pacific Ocean from those of December 1970. Shaded areas are colder in 1971. Contours are dashed in sparse data areas.

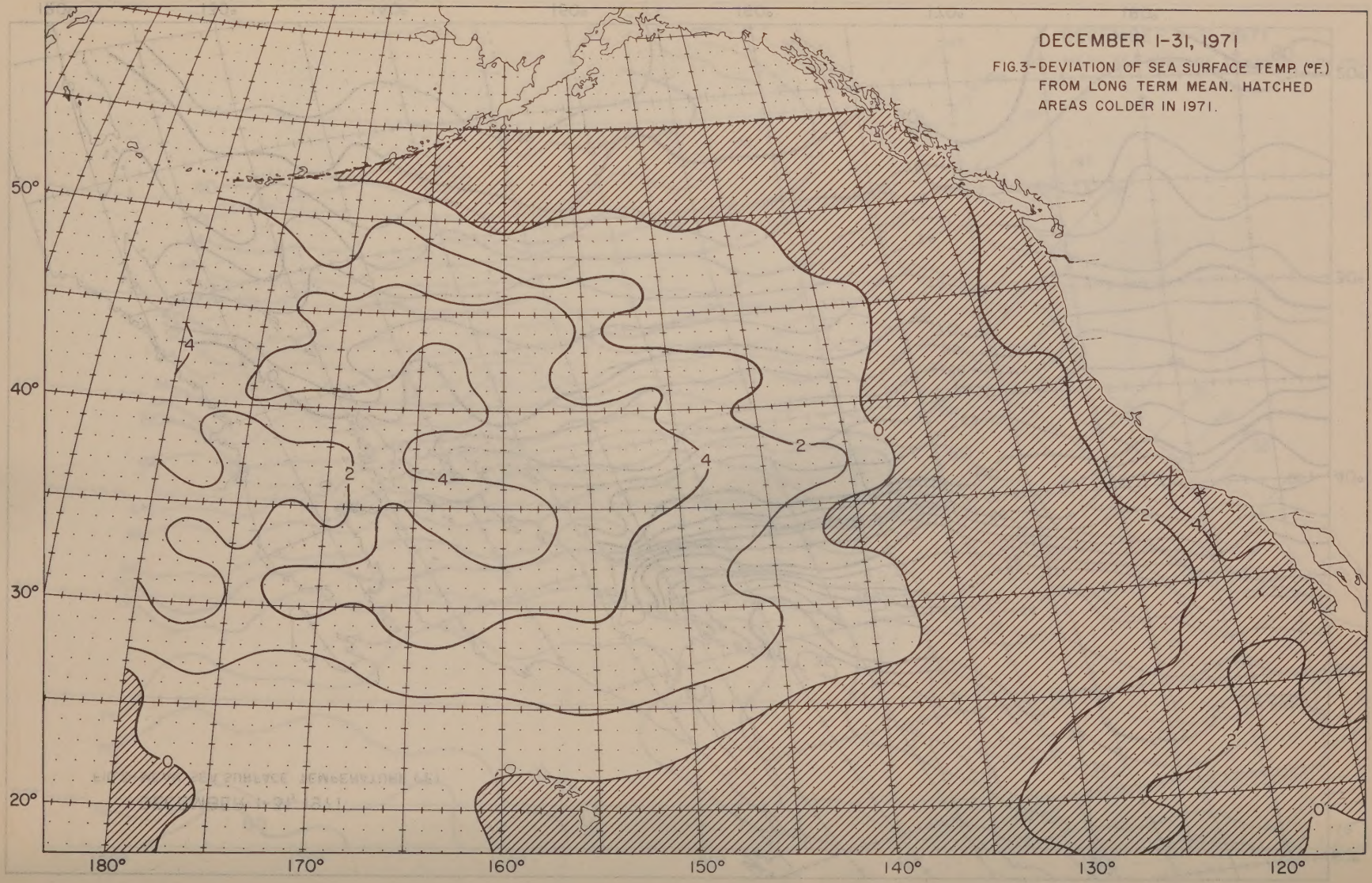
Figure 8. -- Eleven year mean (1961-1971) observed sea level values of barometric pressure (millibars), resultant wind direction (degrees true), resultant wind speed (knots) and average wind speed (knots) regardless of direction.

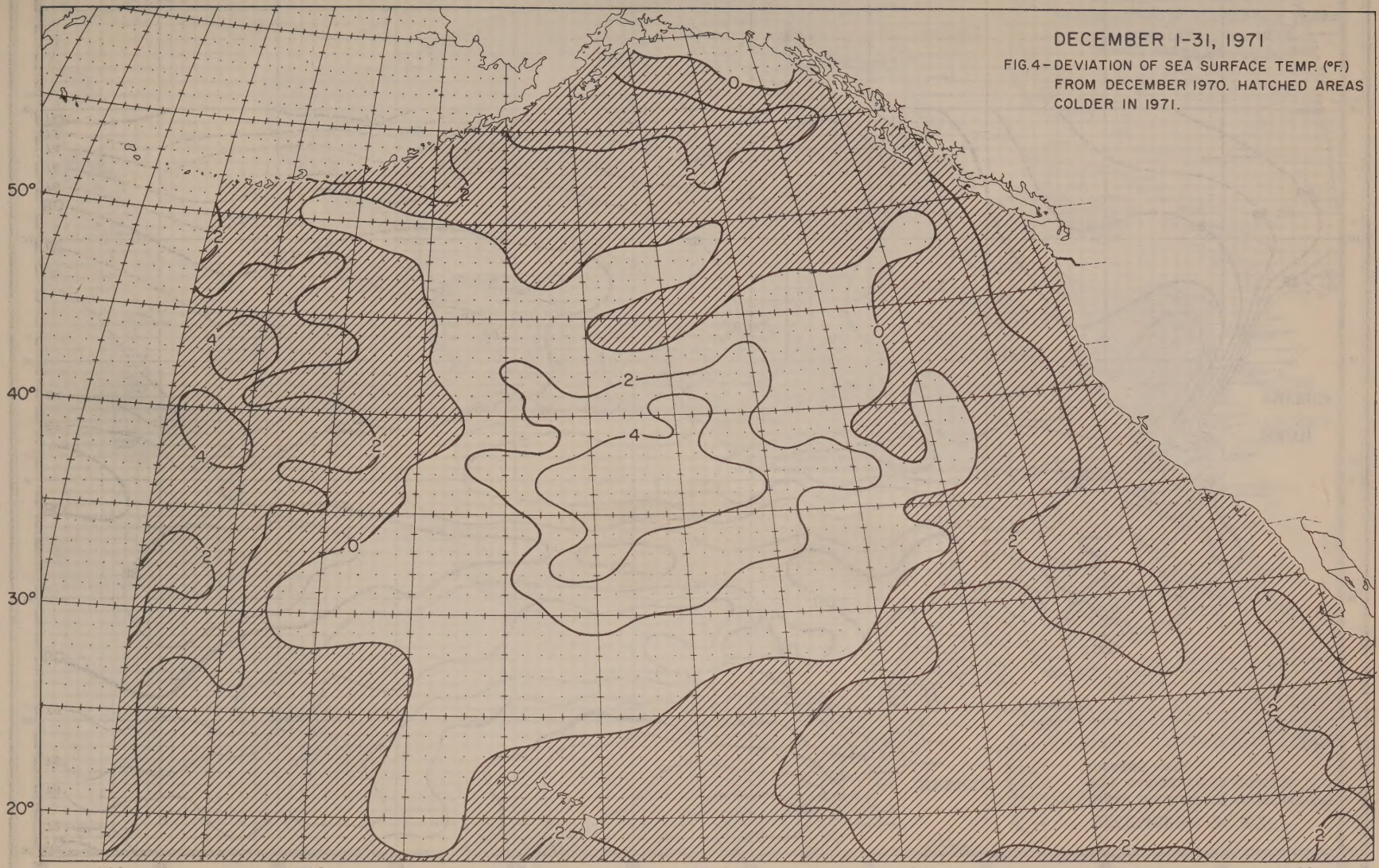
Figure 9. -- Observed sea level values of barometric pressure (millibars), resultant wind direction (degrees true), resultant wind speed (knots), and average wind speed (knots) regardless of direction.

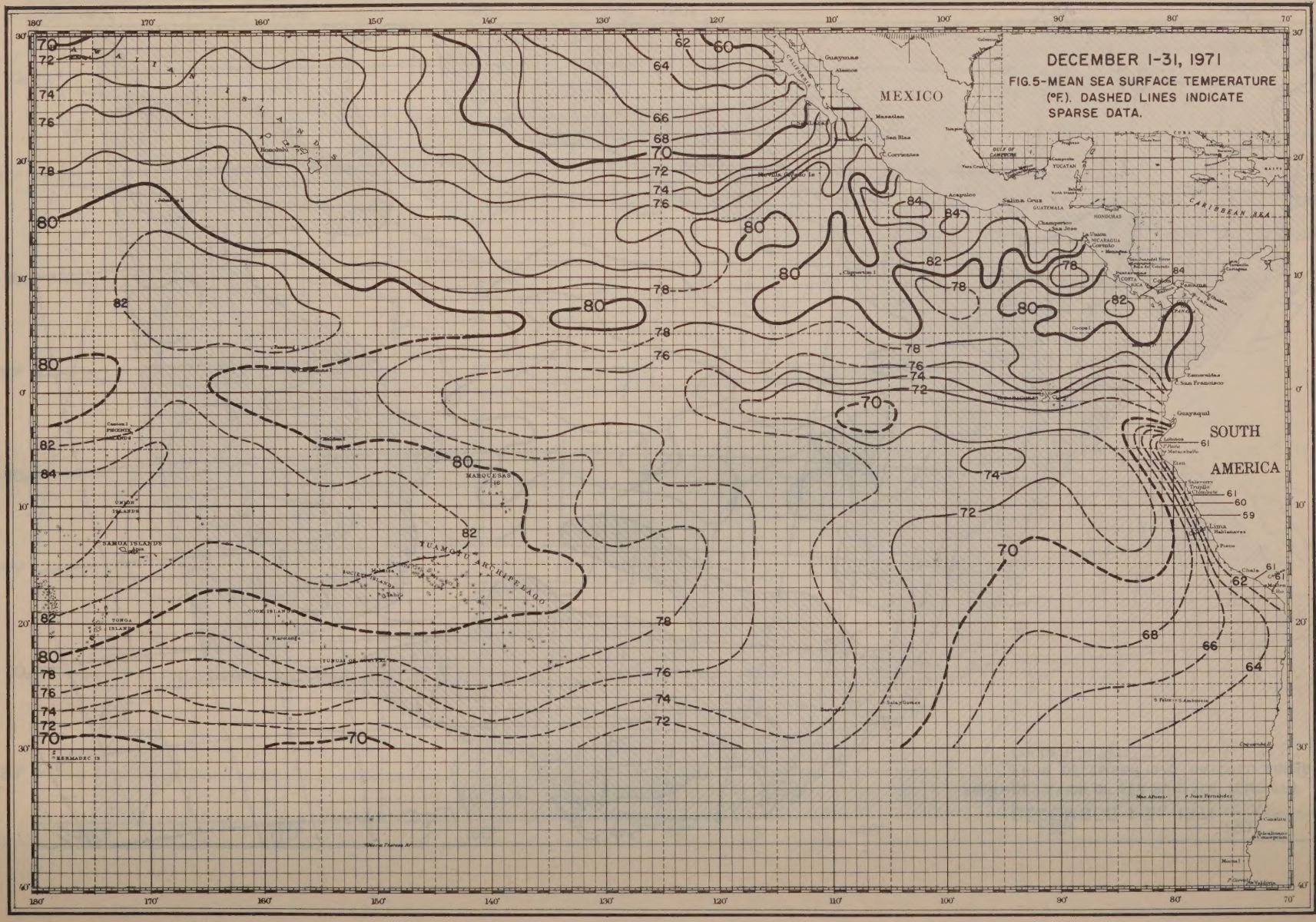
James A. Renner, Fishery Biologist
Kenneth S. Raymond, Scientific Illustrator
January 10, 1972

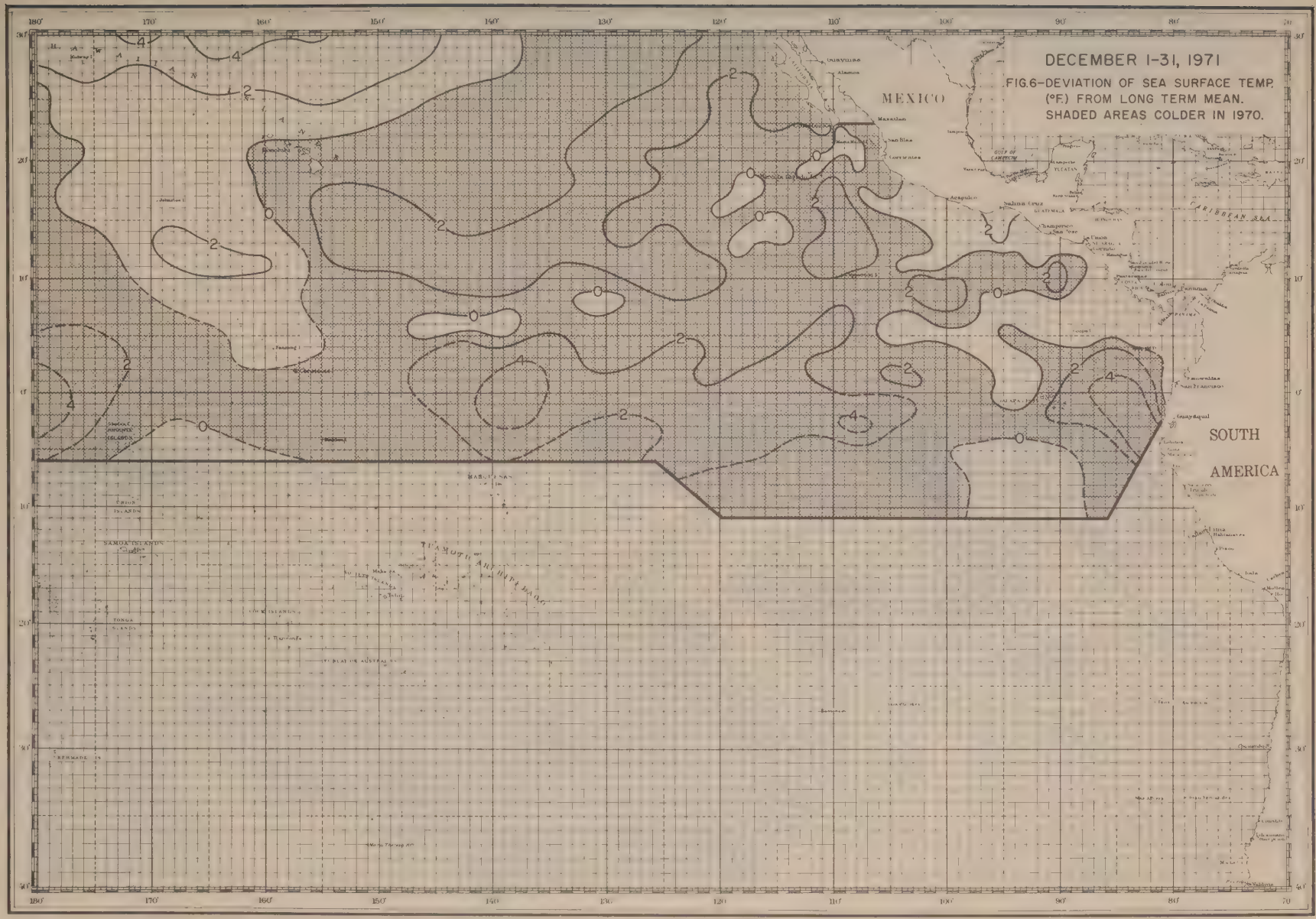

DECEMBER 1-31, 1971
FIG.1- MEAN SEA SURFACE TEMPERATURE (°F)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°

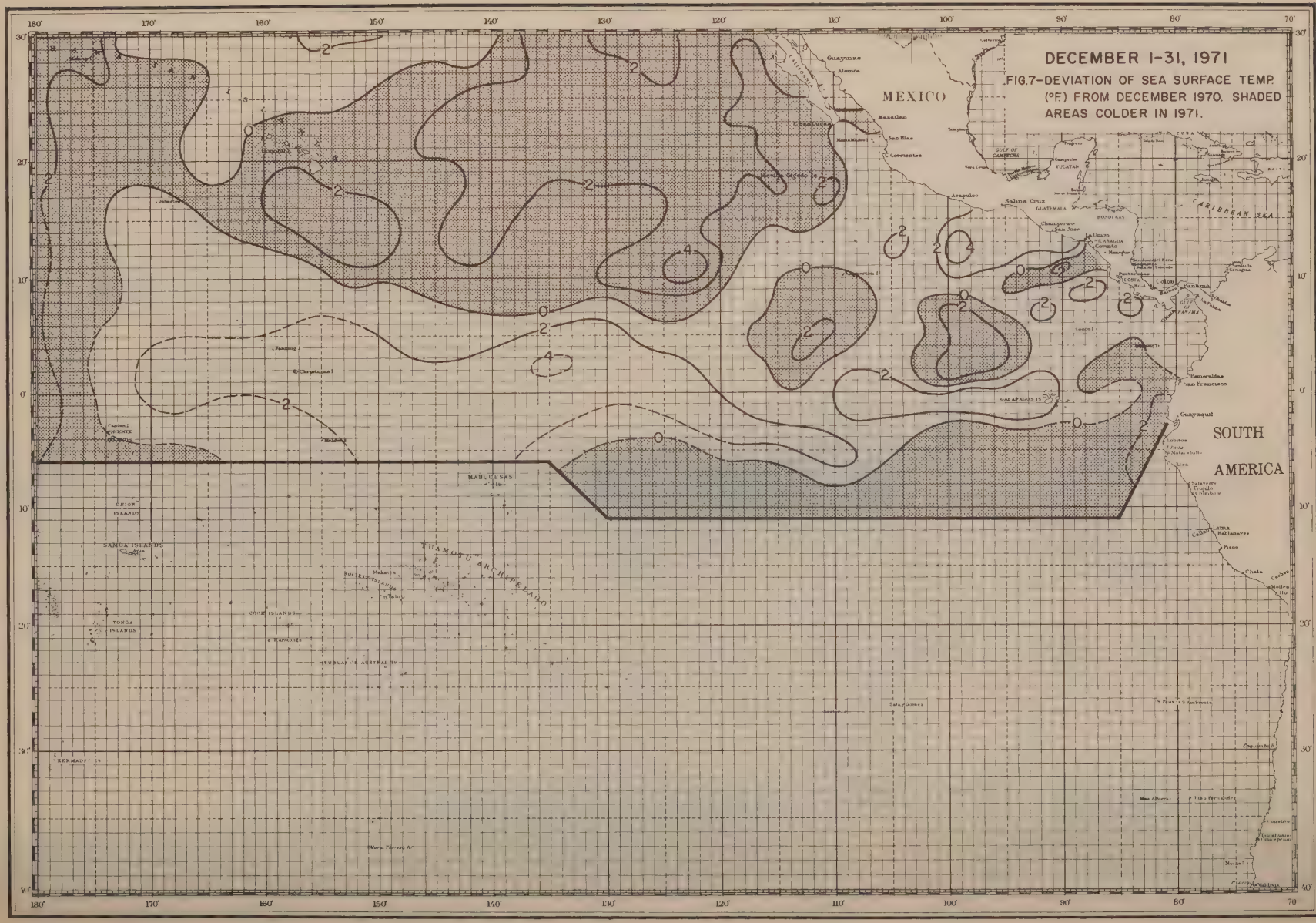

DECEMBER 1-31, 1971
FIG.2-MEAN SEA SURFACE TEMPERATURE (°F.)
36
38
40
36
42
44
46
48
50
56
58
60
62
64
66
68
70
70
72
74
76
78
82
80
80
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°

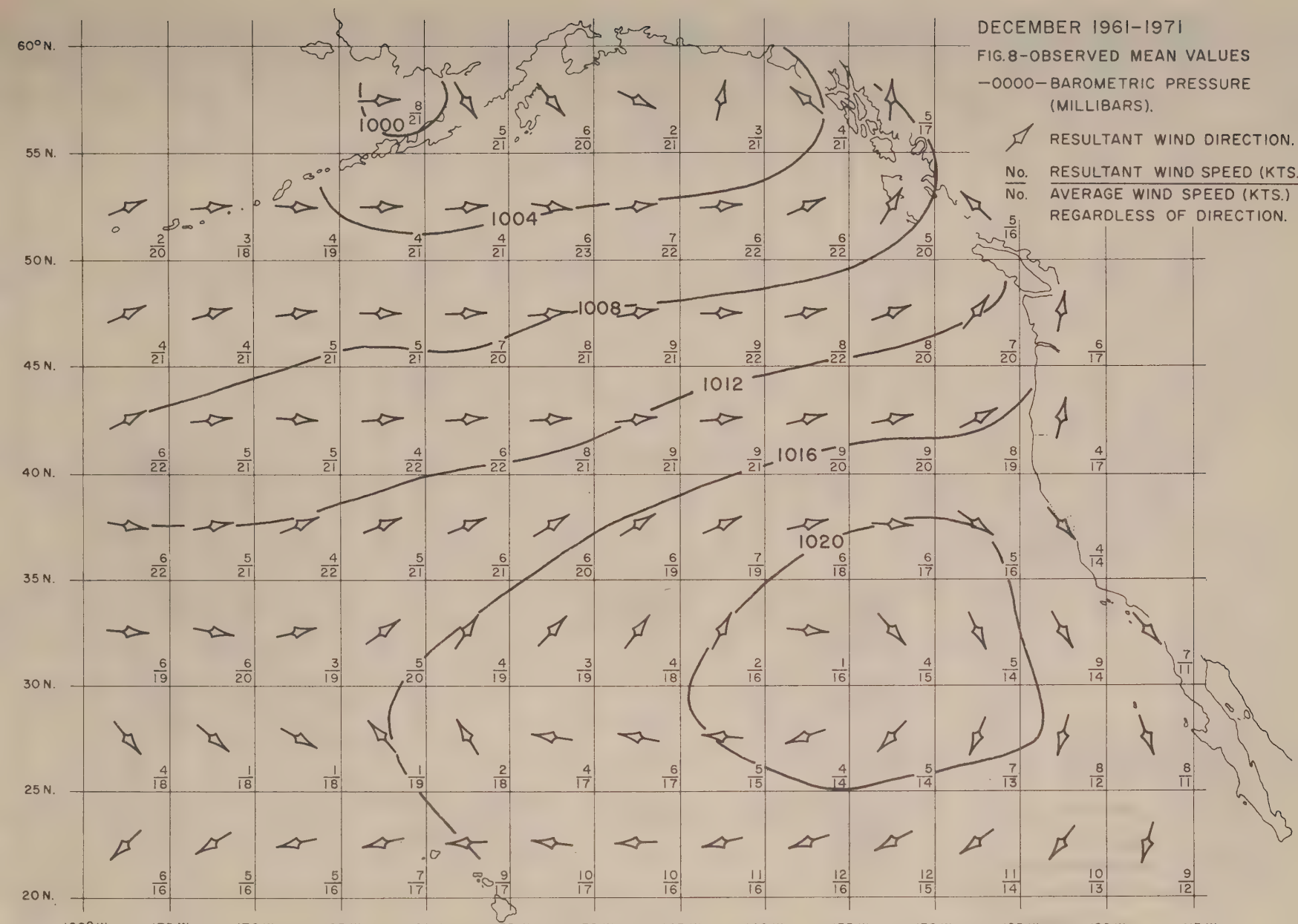

DECEMBER 1-31, 1971
FIG.3-DEVIATION OF SEA SURFACE TEMP. (°F.) FROM LONG TERM MEAN. HATCHED AREAS COLDER IN 1971.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
4
2
4
4
2
0
2
4
0
0
2
0

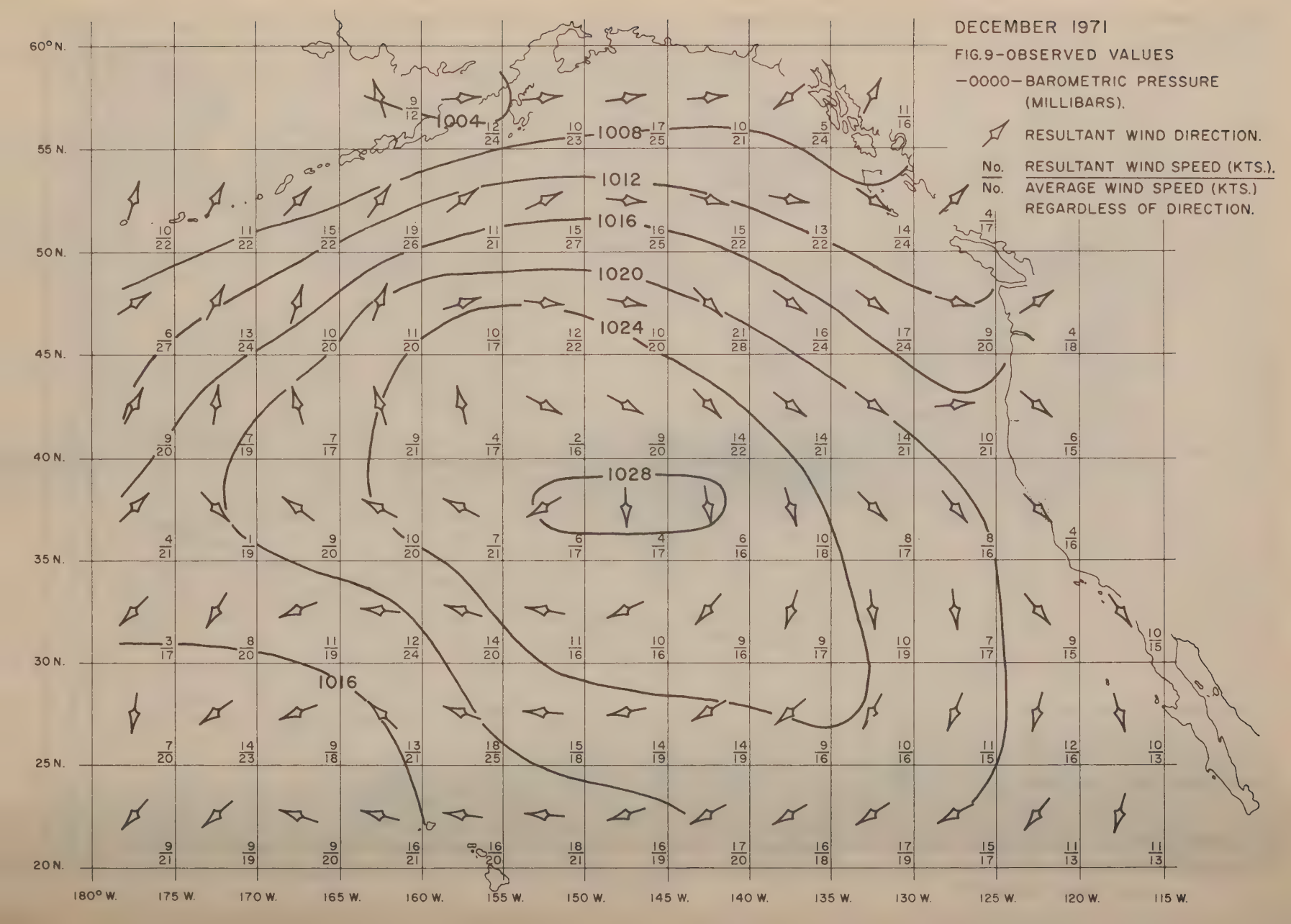

DECEMBER 1-31, 1971
FIG. 4 - DEVIATION OF SEA SURFACE TEMP. (°F.) FROM DECEMBER 1970. HATCHED AREAS COLDER IN 1971.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2
4

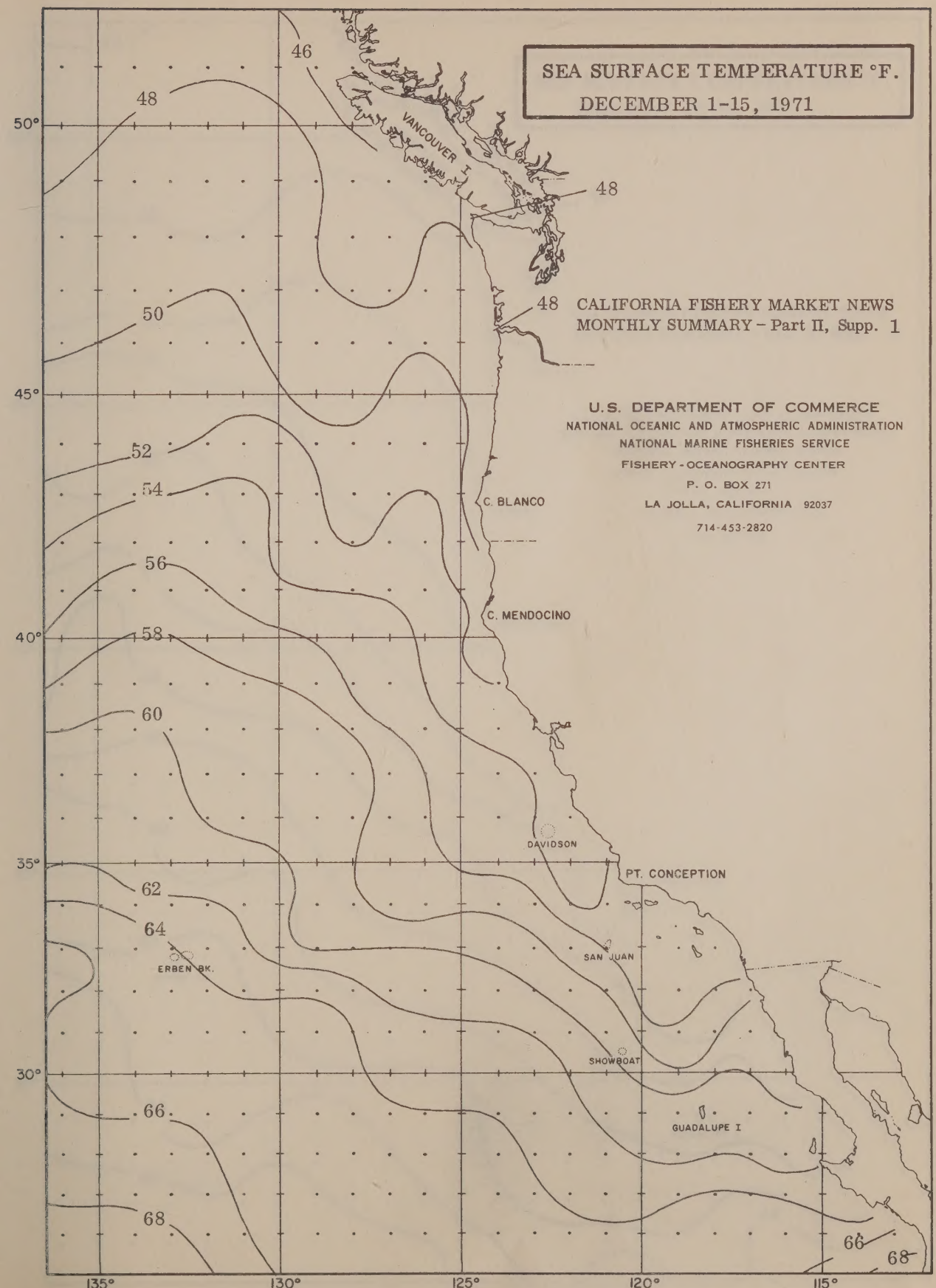

DECEMBER 1-31, 1971
FIG.5-MEAN SEA SURFACE TEMPERATURE (°F). DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
HAWAIIAN ISLANDS
MARQUESAS
TUAMOTU ARCHIPELAGO
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°
30°

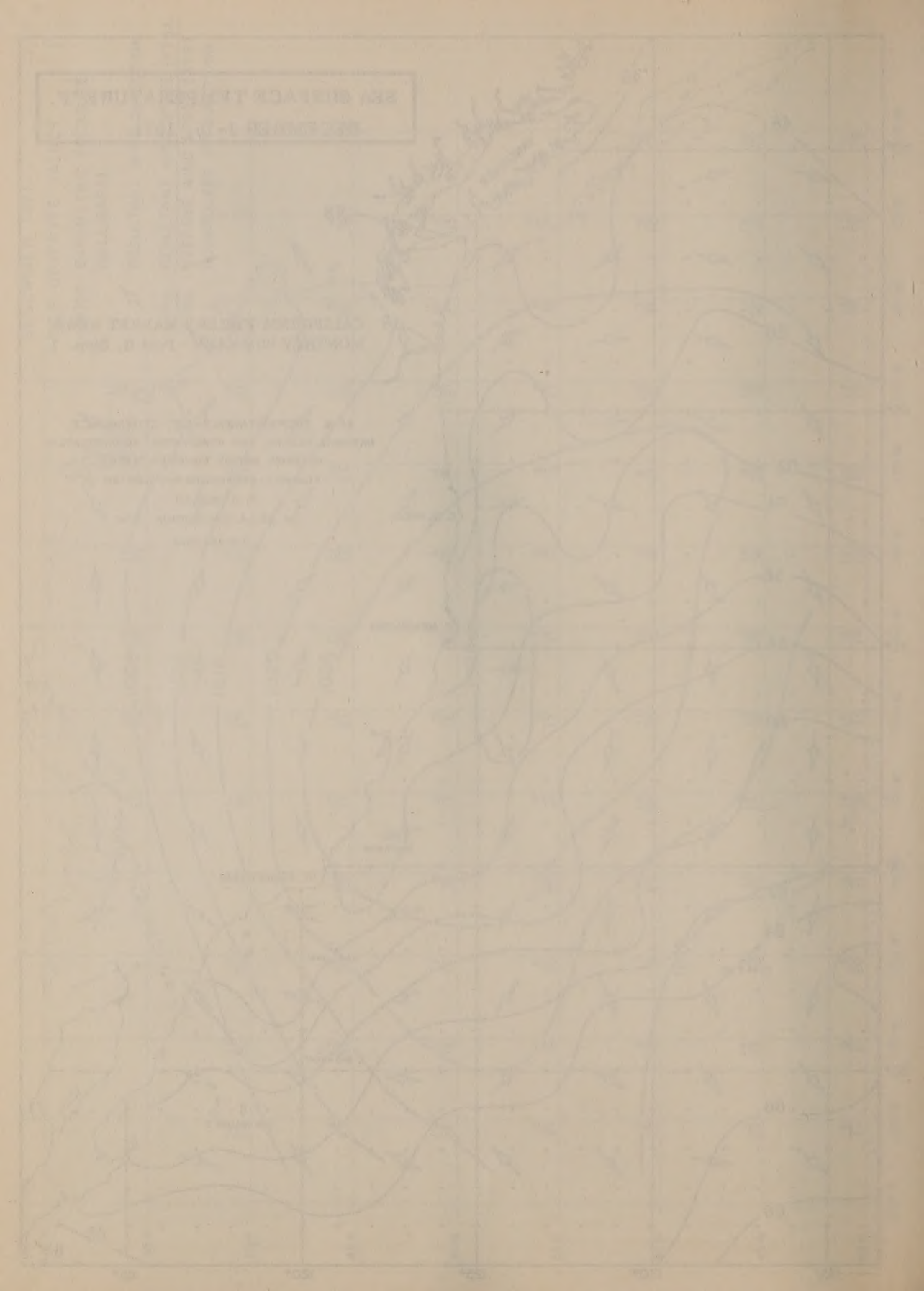

DECEMBER 1-31, 1971
FIG.6-DEVIATION OF SEA SURFACE TEMP. (°F.) FROM LONG TERM MEAN.
SHADED AREAS COLDER IN 1970.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GULF OF CALIFORNIA
YUCATAN
Acapulco
Salina Cruz
GUATEMALA
Tampico
San Jose
Guayaquil
Mazatlan
San Blas
Manzanillo
Galapagos Islands
Marquesas Islands
Samoa Islands
Tonga Islands
Fiji Islands
Tuamotu Archipelago
Easter Island
Pitcairn Island
Tahiti
Bermuda
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°
10°
20°
30°
40°

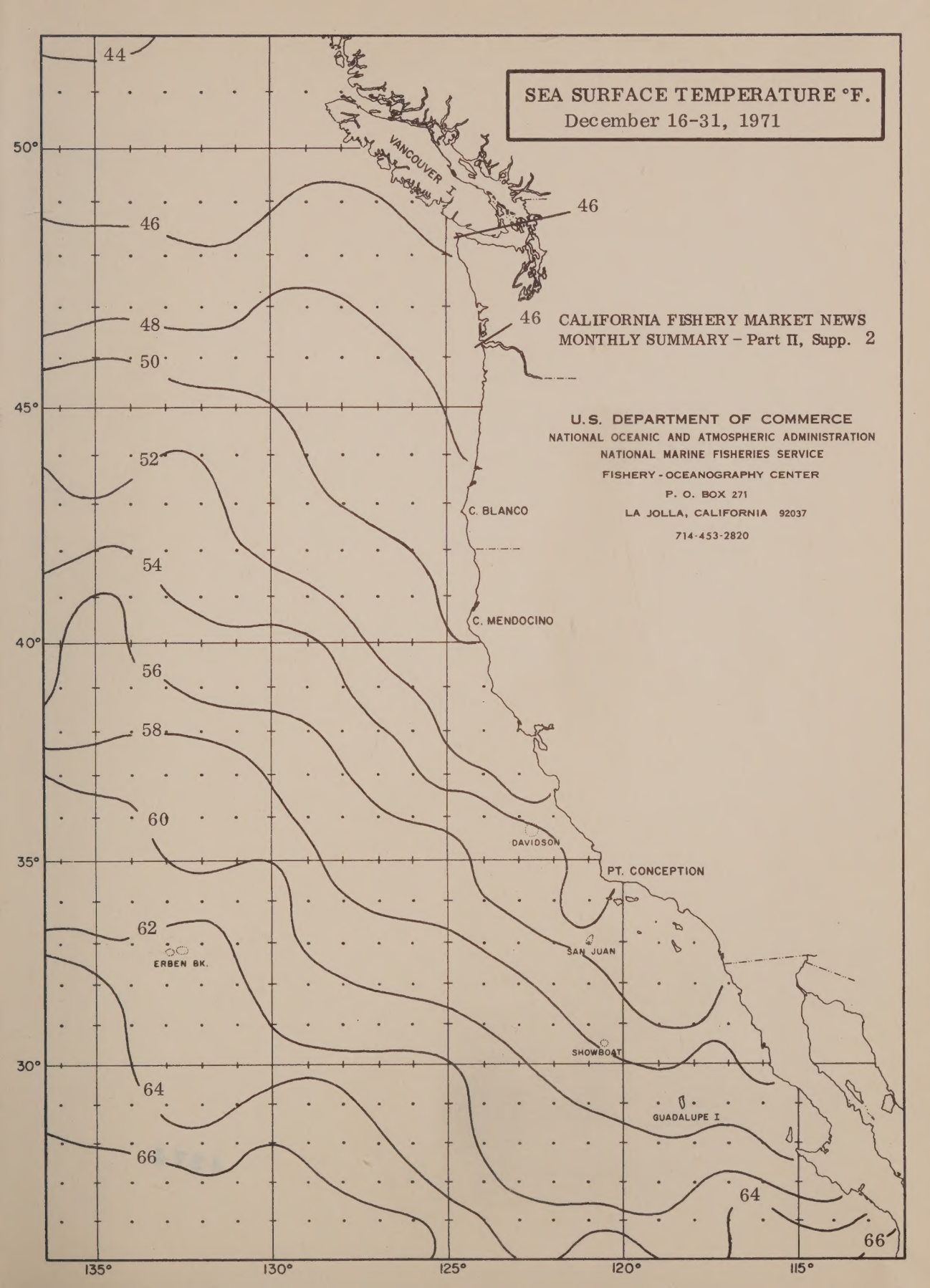

DECEMBER 1-31, 1971
FIG.7-DEVIATION OF SEA SURFACE TEMP. (°F) FROM DECEMBER 1970. SHADED AREAS COLDER IN 1971.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GULF OF CAMPECHE
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
PANAMA
GULF OF PANAMA
GALAPAGOS IS.
MARQUESAS
SAMOA ISLANDS
TONGA ISLANDS
COOK ISLANDS
TUAMOTU ARCHIPELAGO
TUBUAI IS.
AUSTRAL IS.
BERMADEZ IS.
Guayaquil
Lima
Callao
Paita
Arica
Iquique
Valparaiso
Talcahuano
Juan Fernandez
Easter I.
Pitcairn I.
Henderson I.
Oeno I.
Ducie I.
Malden I.
Caroline I.
Flint I.
Vostok I.
Starbuck I.
Fanning I.
Christmas I.
Palmyra I.
Johnston I.
Jarvis I.
Howland I.
Baker I.
Enderbury I.
Union Islands
Manihiki
Rakahanga
Penrhyn
Nassau I.
Suwarrow I.
Rarotonga
Aitutaki
Manuae
Mitiaro
Mauke
Atiu
Takutea
Rimatara
Rurutu
Tubuai
Raivavae
Rapa
Marie Byrd Land
Ross Sea
Amundsen Sea
Bellingshausen Sea
Pacific Ocean
Guaymas
Alamos
Mazatlan
San Blas
Manzanillo
Corrientes
Acapulco
Salina Cruz
Champerico
San Jose
Corinto
Managua
Puntarenas
Golfito
Colon
Panama
Tumaco
San Francisco
Esmeraldas
Manta
Salaverry
Trujillo
Chimbote
Huacho
Pisco
Chala
Matarani
Mollendo
Ilo
Arica
Iquique
Antofagasta
Coquimbo
Valparaiso
Talcahuano
Juan Fernandez
Mas Afuera
Mas Tierra
Easter I.
Sala y Gomez
San Felix
San Ambrosio
Pitcairn I.
Henderson I.
Oeno I.
Ducie I.
Malden I.
Caroline I.
Flint I.
Vostok I.
Starbuck I.
Fanning I.
Christmas I.
Palmyra I.
Johnston I.
Jarvis I.
Howland I.
Baker I.
Enderbury I.
Union Islands
Manihiki
Rakahanga
Penrhyn
Nassau I.
Suwarrow I.
Rarotonga
Aitutaki
Manuae
Mitiaro
Mauke
Atiu
Takutea
Rimatara
Rurutu
Tubuai
Raivavae
Rapa
Marie Byrd Land
Ross Sea
Amundsen Sea
Bellingshausen Sea
Pacific Ocean
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°
10°
20°
30°
40°
50°

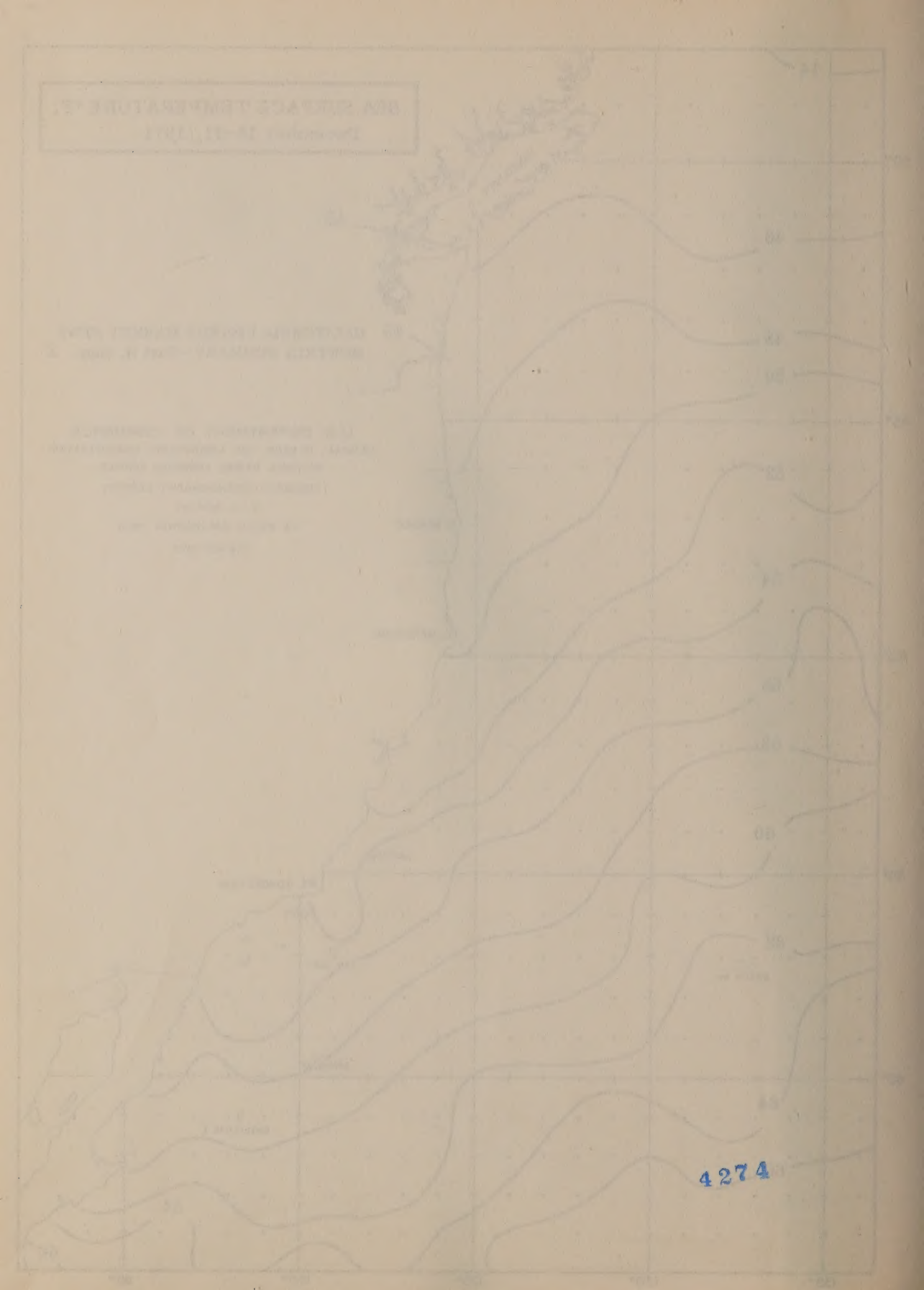

DECEMBER 1961-1971
FIG. 8-OBSERVED MEAN VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.).
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1000
1004
1008
1012
1016
1020
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.


DECEMBER 1971
FIG. 9 - OBSERVED VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.).
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1004
1008
1012
1016
1020
1024
1028
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.


SEA SURFACE TEMPERATURE °F.
DECEMBER 1-15, 1971
CALIFORNIA FISHERY MARKET NEWS
MONTHLY SUMMARY - Part II, Supp. 1
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
FISHERY-OCEANOGRAPHY CENTER
P. O. BOX 271
LA JOLLA, CALIFORNIA 92037
714-453-2820
VANCOUVER
C. BLANCO
C. MENDOCINO
DAVIDSON
PT. CONCEPTION
SAN JUAN
SHOWBOAT
GUADALUPE I
ERBEN BK.
46
48
50
52
54
56
58
60
62
64
66
68
50°
45°
40°
35°
30°
135°
130°
125°
120°
115°




SEA SURFACE TEMPERATURE °F.
December 16-31, 1971
CALIFORNIA FISHERY MARKET NEWS
MONTHLY SUMMARY – Part II, Supp. 2
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
FISHERY-OCEANOGRAPHY CENTER
P. O. BOX 271
LA JOLLA, CALIFORNIA 92037
714-453-2820
VANCOUVER I.
C. BLANCO
C. MENDOCINO
DAVIDSON
PT. CONCEPTION
SAN JUAN
SHOWBOAT
GUADALUPE I
ERBEN BK.
44
46
46
46
48
50
52
54
56
58
60
62
64
66
64
66
50°
45°
40°
35°
30°
135°
130°
125°
120°
115°



4274